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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/584,813	06/27/2006	Toshiaki Kawanishi	930055-2045	4947

7590 01/29/2010  
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EXAMINER
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SAKELARIS, SALLY A

ART UNIT	PAPER NUMBER
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1797

MAIL DATE	DELIVERY MODE
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01/29/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/584,813	<b>Applicant(s)</b> KAWANISHI ET AL.	
	<b>Examiner</b> SALLY A. SAKELARIS	<b>Art Unit</b> 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 October 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 1-7 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 8, 10, 12 and 15-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/2/2009</u> .   | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Response to Amendment***

The amendment filed 10/19/2009 has been received and considered for examination. Claims 1-7 have been withdrawn from consideration. Claims 9, 11, 13, and 14 have been cancelled. Claims 8, 10, 12, and 15-19 remain pending.

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

1. Claims 8, 10, 12, 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stanbro et al. (US 4,728,882) in view of Raymond (US 4510436) and in further view of Hobbs et al. (US 5522980).

With regard to claim 8, Stanbro et al. teach an alcohol concentration sensor of an electrostatic capacitance type for measuring an alcohol concentration in fuel for internal combustion engine mixed with alcohol in Figure 1, comprising: an insulating substrate (14); and a pair of electrodes (10) and (12), arranged on a surface of the insulating substrate to produce an electrostatic capacitance, wherein the insulating substrate is made of a material showing a low dielectric constant (Col. 7 line 55) in their alumina substrate. Stanbro further teach the use of additional, low dielectric constant materials as layers that comprise their substrate such as dielectric silicone rubber which has a dielectric constant of approximately 3 (Col. 7 lines 18-20). Stanbro et al. further teach that the above sensor wherein each pair of electrodes is at least covered partly by an insulating protective film (Fig.1 (16)) and further in Col. 4 line 41 that the

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thickness of the insulating layer (16) to be 1 to 2.5 microns. In addition, Stanbro et al. teaches a case and ends of electrodes. Stanbro also teach a case that exposes part of the insulating substrate to the outside in Figure 1 and in the abstract.

With regard to claim 8, Stanbro does not teach a pair of lead-out electrodes connected respectively to the pair of electrodes and a resin mold that exposes at least a part of the surface of the insulation substrate and capable of sealing connection ends of the lead out electrodes connected to the electrodes and a part of the insulating substrate. Furthermore, Stanbro et al. does not teach the insulating substrate is made from a material showing a specific dielectric constant of not higher than 5.

With regard to claim 8, Raymond teaches a pair of lead-out electrodes (i.e., buses 34 and 32) that connect each electrode to contact pads (36) to seal the connection ends. Furthermore, Raymond et al teach a resin cover and case made out of polyvinylidene fluoride (Col. 2 line 39). The case/cover (22) exposes to the outside at least a part of the surface of the insulating substrate (31). The resin cover is also capable of sealing connection ends of the lead out electrodes (Figure 1).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to have used the resin mold cover, thin film electrodes and lead-out electrode arrangement of Raymond around and within the sensor of Stanbro as the introduction of thin film electrodes confers benefits of lower volume, weight, cost, and higher application temperature to the apparatus. Further, the addition of the cover would provide increased protection to the electrodes by virtue of the addition of a lightweight and cheap material such as polyvinylidene.

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Lastly with regard to claim 8, Raymond teaches that their electrodes are positioned on a substrate made from glass (Col. 2 lines 50-53) (Applicant should note that in applicant's disclosure [0060] glass is taught as having a dielectric constant less than 5 and this is furthermore well known in the art).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to have used the glass substrate taught by Raymond as the substrate in Stanbro as doing so would eliminate the need for using additional insulating layers such as the rubber layer taught by Stanbro in an attempt to decrease the dielectric constant of the substrate and to therefore increase its efficiency.

With regard to claim 8, Stanbro et al. nor Raymond et al. teach that their insulating substrates have a thickness between 200 and 1000 $\mu$ m nor do they teach that their insulating layers having a thickness between 0.4 and 1  $\mu$ m.

Hobbs et al. teach a gas sensor and sensing device that consists of conductors being supported by a glass substrate with a thickness of "about 1mm" (i.e., 1000  $\mu$ m) and an insulating layer having a thickness of "about 0.5 microns" (i.e., 0.5  $\mu$ m).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to have made the thickness of the substrate of Stanbro in view of Raymond to between 200 and 1000 $\mu$ m and the insulating layer to a thickness of between 0.4 and 1  $\mu$ m in light of Hobbs et al.'s teachings that the thinner layers will allow for the entire device to be compact and well suited for mass production (Col. 2 lines 48 and 49). Furthermore, it should be noted that in the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA

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1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990) (The prior art taught carbon monoxide concentrations of "about 1-5%" while the claim was limited to "more than 5%." The court held that "about 1-5%" allowed for concentrations slightly above 5% thus the ranges overlapped.); *In re Geisler*, 116 F.3d 1465, 1469-71, 43 USPQ2d 1362, 1365-66 (Fed. Cir. 1997) (Claim reciting thickness of a protective layer as falling within a range of "50 to 100 Angstroms" considered *prima facie* obvious in view of prior art reference teaching that "for suitable protection, the thickness of the protective layer should be not less than about 10 nm [i.e., 100 Angstroms].") The court stated that "by stating that 'suitable protection' is provided if the protective layer is 'about' 100 Angstroms thick, [the prior art reference] directly teaches the use of a thickness within [applicant's] claimed range."). Similarly, a *prima facie* case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985) (Court held as proper a rejection of a claim directed to an alloy of "having 0.8% nickel, 0.3% molybdenum, up to 0.1% iron, balance titanium" as obvious over a reference disclosing alloys of 0.75% nickel, 0.25% molybdenum, balance titanium and 0.94% nickel, 0.31% molybdenum, balance titanium.).

With regard to claims 10 and 19, Stanbro do not teach that their electrodes are between 0.01 and 0.8  $\mu\text{m}$  or are of the thin film variety.

Raymond teach a dielectric measuring system made from a pair of joined together thin film capacitors with the electrically conductive thin metallic film grown to 2000 Angstroms (i.e., 0.2 $\mu\text{m}$ ) (Col. 3 line 17).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to have used the thin film electrodes at the thickness taught by Raymond within the sensor of Stanbro as the introduction of thin film electrodes confers benefits of lower volume, weight, cost, and higher application temperature to the apparatus.

With regard to claim 12, Stanbro et al. teach that the insulating protective film is made of parylene polymer (Col. 4 line 41) whose dielectric constant is well known by a person of skill in the art to be less than 5, but is further evidenced herein by the *Parylene Properties and Characteristics* guide to be less than 5 on Pg 2.

With regard to claim 15, Stanbro et al. teach an oscillation circuit (Fig. 8 and 9) including a pair of electrodes (32) and a processing section for computationally determining the alcohol concentration according to an oscillation frequency of the oscillation circuit via the schematic shown in Figure 9 and microcomputer (72).

With regard to claims 16, Stanbro et al. teach a processing section that computationally determines the alcohol concentration using a calibration curve in their microprocessor system of Figure 9. The output frequency of each oscillator (62,64) is fed to an associated counter (66,68) which sends the frequency count in digital form via bus 70 to microprocessor 72. A look up table containing data similar to that shown in Fig.2, is stored in the microcomputer and a determination of the concentration of the analyte in the fluid medium is made (Col. 9 lines 40-59).

With regard to claim 17, the look up table within the microprocessor includes a relationship that corresponds to the alcohol concentration and the oscillation circuit, namely the

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determination of the concentration of the analyte in the fluid medium is made (Col. 9 line 50-55) within the range of 0-5% accuracy.

With regard to claim 18, Stanbro teach that the apparatus determines the concentration of hydrocarbons such as hexane, heptane, benzene, and cyclohexane which are all constituent elements of gasoline (Figure 2).

### ***Response to Arguments***

Applicant's arguments with respect to claims 8, 10, 12, and 15-19 have been considered but are moot in view of the new ground(s) of rejection.

To insure that the Examiner is responsive in so far as the rejection regarding Raymond, herein is maintained, and not new, the examiner respectfully disagrees with applicant's arguments on Pg. 11:

*Applicants note instant claim 8 recites "a resin mold for sealing...wherein the resin mold exposes to the outside at least a part of the surface of the insulation substrate with the electrodes formed thereon," and respectfully submit that one of skill in the art would not recognize a thin-walled hollow structure to be a mold for sealing. Accordingly, Raymond fails to teach a resin mold for sealing...wherein the resin mold exposes to the outside at least a part of the surface of the insulation substrate with the electrodes formed thereon as required by claim 8.*

The examiner maintains that the recitation "a resin mold for sealing..." is an intended use limitation and as such will not be afforded patentable weight as recited. The applicant is reminded that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. According to Figure 1, Raymond's resin mold is capable of performing the intended use.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SALLY A. SAKELARIS whose telephone number is (571)272-6297. The examiner can normally be reached on Monday-Friday 8-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 5712721267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SS

/Jill Warden/  
Supervisory Patent Examiner, Art Unit 1797

1/21/2010